PERMITTING & COMPLIANCE DIVISION

♦ *New Community Water Supply Well* ♦

EXPEDITED REVIEW CHECKLIST

October 2007

New Community Water Supply Well Expedited Review Checklist Instructions:

This checklist procedure may be used to gain approval to drill new community water supply wells in lieu of a complete department review when the conditions listed below are met. Construction of a new well is unlawful until approval is granted by the department, typically issued in a letter to the design engineer submitting the plans and specifications. Normally, the Department will review complete submittals within 15 working days. Submittals that do not contain all of the required information are not considered complete.

Conditions for use of the New Community Water Supply Well Checklist:

1. New wells that require a deviation from the Standards of DEQ-1 are not eligible for checklist review.
2. Review and approval is limited to location and construction of the well. Appurtenances such as discharge piping, pitless adapters, well pumps and well houses are not covered. Storage, treatment and distribution are not covered.
3. Radial well collectors, infiltration lines, and dug wells are not eligible for checklist reviews.

Required Documentation: ***Checklists submitted without all of the required documentation will be considered incomplete and will not be processed until all of the required information has been submitted.***

1. A completed New Community Water Supply Well Expedited Checklist Application.
2. An engineering report presenting, at a minimum, the information required in DEQ-1, Chapter 1.
3. Three sets of plans signed and stamped by the professional engineer responsible for the design of the project.
4. Three sets of well specifications signed and stamped by the professional engineer responsible for the design of the project.
5. Three copies of a PWS-6 "Source Water Protection Delineation" report. The report must meet the standards listed in Department Circular PWS-6.
6. Owner certification that a professional engineer will be retained for construction inspection and will certify completion in accordance with the approved plans and prepare as-builts for submittal to the Department within 90 days of project completion.
7. Review Fee as specified in ARM 17.38.106.

Completed checklist submittals may be mailed to: Department of Environmental Quality, Permitting & Compliance Division, Public Water and Subdivisions Bureau, Metcalf Building, P.O. Box 200901, Helena, MT 59620-0901; or for those systems served by the Kalispell Office: Department of Environmental Quality, Public Water Supply Section, 109 Cooperative Way, Suite 105, Kalispell, MT 59901; or for those systems served by the Billings Office: Department of Environmental Quality, Public Water and Subdivisions Bureau, Airport Business Park 1P-9, 1371 Rimtop Drive, Billings, MT 59105-1978. Questions can be answered by writing the above address or calling (406) 444-4400 in Helena, (406) 755-8985 in Kalispell and (406) 247-4445 in Billings.

DEPARTMENT OF ENVIRONMENTAL QUALITY
NEW PUBLIC WATER SUPPLY WELL EXPEDITED REVIEW CHECKLIST

Project Name _____

Nearest City _____ County _____

Public Supply Owner _____

Developer _____

Mailing Address _____

Engineer _____

Mailing Address _____

Will this well be connected to an existing system? If so, PWSID number of system: _____

Will this well be associated with a Subdivision? If so, Subdivision name: _____

REQUIRED DOCUMENTATION:

Checklists submitted without all of the required documentation will be considered incomplete and will not be processed until all of the required information is submitted.

Included?

Y	**No**	
☐	☐	An engineering report presenting, at a minimum, all of the information listed below in ENGINEERING REPORT.
☐	☐	Three sets of plans signed and stamped by the professional engineer responsible for the design of the project. The plans must show all of the required information listed below under PLANS.
☐	☐	Three sets of well specifications signed and stamped by the professional engineer responsible for the design of the project. The specifications must meet all of the standards listed below under WELL SPECIFICATIONS.
☐	☐	Three copies of a PWS-6 "Source Water Protection Delineation" report. The report must meet the standards listed in Department Circular PWS-6.
☐	☐	Owner certification that a professional engineer will be retained for construction inspection and will certify completion in accordance with the approved plans and prepare as-builts for submittal to the Department within 90 days of project completion.
☐	☐	Review Fee as specified in ARM 17.38.106.

Every "Yes" answer must have the page number where the information can be found listed. Every "N/A" answer must be accompanied by a written explanation of the reason the standard is not applicable.

ENGINEERING REPORT:

Included? **Y**	**N/A**	**Page**	
			1.1.1 General information, including:
☐	☐	_____	a. description of any existing water works and sewerage facilities,
☐	☐	_____	b. identification of the municipality or area served,
☐	☐	_____	c. name and mailing address of the owner and developer.
			1.1.2 Extent of water works system, including
☐	☐	_____	a. description of the nature and extent of the area to be served,
☐	☐	_____	b. provisions for extending the water works system to include additional areas, and
☐	☐	_____	c. appraisal of the future requirements for service, including existing and potential industrial, commercial, institutional, and other water supply needs.
☐	☐	_____	**1.1.3 Alternate plans.** Where two or more solutions exist for providing public water supply facilities,

each of which is feasible and practicable, discuss the alternate plans. Give reasons for selecting the one recommended, including financial considerations, and a comparison of the minimum classification of water works operator required for operation of each alternative facility.

☐ ☐ _____ **1.1.4 Site Conditions.** Soil and groundwater conditions, including a description of the character of soil through which water mains are to be laid and the approximate elevation and flow direction of groundwater in relation to subsurface structures.

1.1.5 Water use data, including:

☐ ☐ _____ a. a description of the population trends as indicated by available records, and the estimated population which will be served by the proposed water supply system or expanded system, a minimum of 20 years in the future in five year intervals or over the useful life of the critical structures and equipment,

☐ ☐ _____ b. present water consumption and the projected average and maximum daily demands, including fire flow demand (see DEQ-1 Section 1.1.6),

☐ ☐ _____ c. present and/or estimated yield of the sources of supply, and

☐ ☐ _____ d. unusual occurrences.

☐ ☐ _____ **1.1.7 Sewage system available.** Describe the existing or proposed sewage collection system and sewage treatment works, with special reference to their relationship to existing or proposed water works structures which may affect the operation of the water supply system, or which may affect the quality of the supply.

1.1.8.2 Groundwater sources of water supply. Describe the proposed source or sources of water supply to be developed, the reasons for their selection, and provide information as follows:

☐ ☐ _____ a. sites considered,

☐ ☐ _____ b. advantages of the site selected,

☐ ☐ _____ c. elevations with respect to surroundings,

☐ ☐ _____ d. probable character of formations through which the source is to be developed through nearby well logs,

☐ ☐ _____ e. geologic conditions affecting the site, such as anticipated interference between proposed and existing wells,

3.2.1.1 Source capacity

☐ ☐ _____ a. The total developed groundwater source capacity for systems utilizing gravity storage or pumped storage, unless otherwise specified by MDEQ must equal or exceed the design maximum day demand with the largest producing well out of service. Storage must comply with the requirements of Section 7.0.1.

☐ ☐ _____ b. The total developed groundwater source capacity for systems utilizing hydropneumatic storage tanks as the only storage facility must be sufficient to equal or exceed the peak instantaneous demand with the largest producing well out of service. For systems serving 50 or less equivalent dwelling units, MDEQ may allow a reduction in total required system capacity provided the system can maintain the minimum pressures required in section 8.2.1 with the largest producing well out of service.

☐ ☐ _____ **3.2.1.2 Number of sources.** A minimum of two sources of groundwater must be provided

☐ ☐ _____ **3.2.3.1 Well location**. Wells must be located at least 100 feet from sewer lines, septic tanks, holding tanks, and any structure used to convey or retain industrial, storm or sanitary waste.

☐ ☐ _____ **3.2.3.2 Continued protection.** Continued protection of the well site from potential sources of contamination must be provided either through ownership, zoning, easements, leasing or other means acceptable to MDEQ. Such protection must extend for a radius of at least 100 feet around the well. Also, separation distances between proposed wells and potential sources of contamination must be defined and justified by the design engineer in accordance with DEQ-1, Section 1.1.8.2. The zone of influence of a proposed or existing well must not be in a groundwater mixing zone as defined in ARM 17.30.517. Fencing of the site may be required.

PLANS:

Included?
Y N/A Page

1.2.1 General layout, including:

☐ ☐ _____ a. suitable title,

☐ ☐ _____ b. name of municipality, or other entity or person responsible for the water supply,

☐ ☐ _____ c. area or institution to be served,
☐ ☐ _____ d. scale, in feet,
☐ ☐ _____ e. north point,
☐ ☐ _____ f. datum used,
☐ ☐ _____ g. boundaries of the municipality or area to be served,
☐ ☐ _____ h. date, and name of the designing engineer,
☐ ☐ _____ i. ink imprint of registered professional engineer's seal and signature,
☐ ☐ _____ j. location and size of existing water mains, and
☐ ☐ _____ k. location and nature of any existing water works structures and appurtenances affecting the proposed improvements noted on one sheet.

1.2.2 Detailed plans, including, where pertinent:

☐ ☐ _____ c. location and size of the property to be used for the groundwater development with respect to known references such as roads, streams, section lines, or streets,
☐ ☐ _____ d. topography and arrangement of present or planned wells or structures, with contour intervals not greater than two feet,
☐ ☐ _____ e. elevations of the highest known flood level, floor of the structure, upper terminal of protective casings and outside surrounding grade, using United States Coast and Geodetic Survey, United States Geological Survey or equivalent elevations where applicable as reference,
☐ ☐ _____ f. plan and profile drawings of well construction, showing diameter and depth of drill holes, casing and liner diameters and depths, grouting depths, elevations and designation of geological formations, water levels and other details to describe the proposed well completely,
☐ ☐ _____ g. location, size and length of existing or proposed streets; water sources, including ponds, lakes and drains; storm, sanitary, combined and house sewers; septic tanks, disposal fields and cesspools; and abandoned wells.

3.2.3.1 and 3.2.3.2 Well location and continued protection zone

☐ ☐ _____ Plans must identify the continued protection zone and all sewer lines, septic tanks, holding tanks, groundwater mixing zones and any structure used to convey or retain industrial, storm or sanitary waste located within 100 feet of the proposed well.

WELL SPECIFICATIONS:

Included?
Y N/A Page

☐ ☐ _____ **3.2 Groundwater** All wells must be constructed by a licensed water well contractor in accordance with Title 37, Chapter 43, MCA and Title 36, Chapter 21, ARM, current edition, (Water Well Contractor rules) with the following additional requirements.

3.2.2.1 Microbiological quality

☐ ☐ _____ a. Disinfection of every new, modified or reconditioned groundwater source must be provided in accordance with ARM 36.21.662(1) prior to placement of permanent pumping equipment, and (2) must be provided after placement of permanent pumping equipment.
☐ ☐ _____ b. More than 72 hours after disinfection, two or more water samples must be submitted to a laboratory certified by the Department of Public Health and Human Services for microbiological analysis with satisfactory results reported to MDEQ prior to placing the well into service.

3.2.2.2 Physical, chemical, and radiological quality

☐ ☐ _____ a. Every new, modified or reconditioned groundwater source must be examined for applicable physical and chemical characteristics by tests of a representative sample in a laboratory certified by the Department of Public Health and Human Services, with the results reported to MDEQ.
☐ ☐ _____ b. Samples must be collected at the conclusion of the test pumping procedure prior to disinfection and examined as soon as practical. Sample results for the constituents of ARM 17.38.216 must be submitted to MDEQ for review and approval to demonstrate compliance with Title 17, Chapter 38, Sub-Chapter 2, ARM, prior to placing the well into service.

3.2.4.1 Yield and drawdown tests must:

☐ ☐ _____ a. be performed on every production well after construction or subsequent treatment and prior to placement of the permanent pump,
☐ ☐ _____ b. have the test methods clearly indicated in the project specifications,
☐ ☐ _____ c. have a test pump capacity, at maximum anticipated drawdown, at least 1.5 times the quantity anticipated, and

☐ ☐ _____ d. provide for continuous constant rate pumping at 1.5 times the design pump capacity for at least 24 hours. Data collection must begin at time zero. The test may be terminated if stabilized drawdown occurs for at least six hours during the test. If the design pumping rate is 35 gpm or greater, the minimum stabilized drawdown period must be at least eight hours.

☐ ☐ _____ e. provide the following data: 1. static water level, 2. time of starting and ending each test cycle, 3. pumping rate, 4. test pump capacity-head characteristics, 5. depth of test pump setting, 6. maximum drawdown, 7. pumping water levels taken so as to provide at least 10 evenly spaced data points per log cycle of time (in minutes) on a time-drawdown plot, and 8. water recovery levels taken so as to provide at least 10 evenly spaced data points per log cycle of time (in minutes) on a time-drawdown plot.

3.2.4.2 Plumbness and alignment requirements

☐ ☐ _____ a. Every well must be tested for plumbness and alignment in accordance with AWWA A100.

☐ ☐ _____ b. The test method and allowable tolerance must be clearly stated in the specifications.

☐ ☐ _____ c. If the well fails to meet these requirements, it may be accepted by the engineer if it does not interfere with the installation or operation of the pump or uniform placement of grout.

3.2.4.3 Geological data must

☐ ☐ _____ a. be determined in accordance with ARM 36.21.667 except that samples must be collected at intervals of five feet or less. Upon completion, a copy of the well log must be submitted to MDEQ, and

☐ ☐ _____ b. be supplemented with a driller's log, and accurate geological location such as latitude and longitude or GIS coordinates as determined by GPS to an accuracy of +/- 25 feet.

☐ ☐ _____ **3.2.5.1 Drilling fluids and additives** must be approved by the National Sanitation Foundation (NSF) or a similar ANSI accredited laboratory/organization.

3.2.5.2 Minimum protected depths

☐ ☐ _____ b. Wells must have unperforated casing to a minimum depth of 25 feet or continuous disinfection with chlorine must be provided.

☐ ☐ _____ c. Full time disinfection with chlorine is required where the water source is an aquifer with a water table that is within 25 feet of the ground surface.

3.2.5.3 Permanent steel casing pipe must:

☐ ☐ _____ a. be in accordance with ARM 36.21.640,

☐ ☐ _____ b. when driven, be equipped with a drive shoe in accordance with ARM 36.21.644, and

☐ ☐ _____ c. have joints in accordance with ARM 36.21.642.

☐ ☐ _____ **3.2.5.4 Nonferrous casing materials.** Plastic well casing must be in accordance with ARM 36.21.645 and ARM 36.21.646.

☐ ☐ _____ **3.2.5.5 Packers.** Packers must be of material that will not impart taste, odor, toxic substance or bacterial contamination to the well water. Lead packers must not be used.

3.2.5.6 Screens must:

☐ ☐ _____ a. be constructed of materials resistant to damage by chemical action of groundwater or cleaning operations,

☐ ☐ _____ b. have size of openings based on sieve analysis of formation and/or gravel pack materials,

☐ ☐ _____ c. have sufficient length and diameter to provide adequate specific capacity and low aperture entrance velocity. The entrance velocity must not exceed 0.1 feet per second,

☐ ☐ _____ d. be installed so that the pumping water level remains above the screen under all operating conditions,

☐ ☐ _____ e. where applicable, be designed and installed to permit removal or replacement without adversely affecting water-tight construction of the well, and

☐ ☐ _____ f. be provided with a bottom plate or washdown bottom fitting of the same material as the screen.

3.2.5.7 Grouting requirements

☐ ☐ _____ a. All permanent well casing must be sealed in accordance with ARM 36.21.654 through ARM 36.21.660.

☐ ☐ _____ b. The casing must be provided with centralizers in accordance with ARM 36.21.649.

3.2.5.8 Upper terminal well construction

☐ ☐ _____ a. Permanent casing for all groundwater sources must be in accordance with ARM 36.21.647.

☐ ☐ _____ c. Sites subject to flooding must be provided with an earth mound surrounding the casing and terminating at an elevation at least two feet above the 100 year flood level or highest known flood elevation.

☐ ☐ _____ d. The top of the well casing at sites subject to flooding must terminate at least three feet above the 100 year flood level or the highest known flood elevation, whichever is higher.

☐ ☐ _____ e. Protection from physical damage must be provided.

3.2.5.9 Development

☐ ☐ _____ a. Every well must be developed in accordance with ARM 36.21.653.

☐ ☐ _____ b. Where chemical conditioning is required, the specifications must include provisions for the method, equipment, chemicals, testing for residual chemicals, and disposal of waste and inhibitors.

☐ ☐ _____ c. Where blasting procedures may be used, the specifications must include the provisions for blasting and cleaning. Special attention must be given to assure that the grouting and casing are not damaged by the blasting.

☐ ☐ _____ **3.2.5.10 Capping requirements.** Temporary capping must be in accordance with ARM 36.21.661

3.2.6.1 Sand or gravel wells

☐ ☐ _____ a. If clay or hard pan is encountered above the water bearing formation, the well must be constructed in accordance with ARM 36.21.657.

☐ ☐ _____ b. If a sand or gravel aquifer is overlaid only by permeable soils, the well must be constructed in accordance with ARM 36.21.656.

3.2.6.2 Gravel pack wells

☐ ☐ _____ a. Gravel pack must be well rounded particles, 95 per cent siliceous material, that are smooth and uniform, free of foreign material, properly sized, washed and then disinfected immediately prior to or during placement.

☐ ☐ _____ b. Gravel pack must be placed in one uniform continuous operation.

☐ ☐ _____ c. Gravel refill pipes, when used, must be Schedule 40 steel pipe incorporated within the pump foundation and terminated with screwed or welded caps at least 12 inches above the pump house floor or concrete apron.

☐ ☐ _____ d. Gravel refill pipes located in the grouted annular opening must be surrounded by a minimum of 1 1/2 inches of grout.

☐ ☐ _____ **3.2.6.6 Consolidated formation wells.** Drilled wells that penetrate an aquifer either within or overlain by a consolidated formation must be grouted in accordance with ARM 36.21.655.

☐ ☐ _____ **3.2.6.7 Naturally flowing wells** must be sealed in accordance with ARM 36.21.658.

Additional Comments: _____

_____

_____

_____

_____

I certify that the plans, specifications, certified checklist and supporting documentation and attachments to be in compliance with all of the applicable standards of the Department of Environmental Quality Circular DEQ 1.

_____ _____

(Signature of Professional Engineer) (Date Signed)

PE Stamp

Final Source Approval

Approval to drill a new community well will be conditioned on compliance with applicable DEQ-1 requirements. In order to obtain final source approval to use the new well, the following items need to be submitted to DEQ for approval once the well has been completed:

1. Documentation that an application for water rights has been filed with the Department of Natural Resources when quantities exceed 35 gpm. (DEQ-1, Standard 1.1.8.2.g).

2. A final assessment for proposed groundwater sources that may be under the direct influence of surface water, prepared in accordance with PWS-5, "Assessment of Groundwater Sources Under the Direct Influence of Surface Water" (DEQ-1, Standard 1.1.8.2.h).

3. A final Source Water Protection Plan prepared in accordance with PWS-6 if field results differ substantially from that predicted in the preliminary Source Water Protection Plan, (DEQ-1, Standard 1.1.8.2.i).

4. A description of any wellhead protection measures being considered. (DEQ-1, Standard 1.1.8.2.j)

5. Documentation that the continued protection zone has been provided through ownership, zoning, easements or leasing. Easements must be filed with the County Clerk and Recorders Office. (DEQ-1, Standard 3.2.3.2)

6. Test Pump results demonstrating compliance with DEQ-1, Standard 3.2.4.1.

7. Water quality sample results demonstrating compliance with DEQ-1, Standard 3.2.2.1 Microbiological quality, and DEQ-1, Standard 3.2.2.2 Physical, chemical and radiological quality.

8. A copy of the completed well log. (DEQ-1, Standard 3.2.4.3)

9. A discussion of the maximum and average day demand in relation to developed source capacity to demonstrate compliance with DEQ-1 Standard 3.2.1.1.

10. A discussion of the static water level of the well and compliance with DEQ-1, Standard 3.2.5.2.

Please note that source approval is limited to location and construction of the well. Plans and specifications for approval of well appurtenances (discharge piping, pitless adapters, well pumps) must be submitted separately and will not be reviewed under an expedited process. If required, plans and specifications for storage, treatment, distribution, and Appendix A information must also be submitted separately and will not be reviewed under an expedited process.